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Expo Building Remodeling
Fond du Lac County Fairgrounds

Re-roof system comparison
Interior sound control system comparison

Preliminary Observations

Roofing
The existing roof is a "screw down" metal roof. "Screw down" metal roof panels are directly attached to the building structural frame with gasketed screws. This type of attachment does not accommodate thermal expansion very well, resulting in the development of leaks (over time) around the screw gaskets and the panel laps. On this building, this screw attachment to the structure is made through a 1" foam thermal block that breaks the "metal to metal" cold bridge typical to most "screw down" roofs. The cavity between the roof purlins is filled with a 4" and a 6" fiberglass batt providing an R value of approximately 30. A poly vapor barrier covers the bottom surface of the insulation and a metal liner panel encloses the assembly. Woodruff Roofing Company performed a "pull-out" test and determined that the existing roof panel has adequate strength for direct attachment of a new over-roof system.

The existing insulation in the roof system is quite high even per today's energy codes. Currently, a typical metal building will easily meet the code with thermal blocks and an R-19 fiberglass batt. It is our opinion that *additional insulation will not* have significant impact on energy savings.

We contacted and worked with Woodruff Roofing (Fond du Lac) for the Rubber Roofing data and information, with Muza Sheet Metal (Oshkosh) for the Metal Roofing, Gutters and Downspouts information and North Central Insulation for Urethane Foam Roofing system information. We researched the PVC roofing membrane system from various manufacturers via the internet. Both Woodruff Roofing and Muza Sheet Metal have provided Re-roofs on existing Fairgrounds buildings.

Ceiling, Acoustics
The metal liner panel on the ceiling is a good, durable surface, but it has a very low NRC rating. Low NRC rating means that most of the sound that encounters it will be reflected back. The concrete floor, concrete block walls, and the metal ceiling panels all have very low NRC ratings. A sound absorbing ceiling of some kind will greatly improve the buildings poor sound characteristics.

Roof Systems
We have added the cost of new Gutters and Downspouts to all these quotes. The new material would be 24 gauge, prefinished steel with continuous attachment for the gutters and open-faced downspouts.

1. Rubber Membrane: The system is comprised of 1-1/2" foam panels placed between the existing roof panel ribs to form a level surface. A 1/2" wood fiber board is mechanically fastened over that to provide a smooth surface for the EPDM to be attached with adhesive.

- Cost: $4.25 per square foot (31,250 SF x $4.25 = $132, 812.00 +/-)
- 15 year warranty (up to 20 year at extra cost)
- Black color to accelerate snow melting
- Approx. one to two weeks for installation

2. Standing Seam Metal: The system is comprised of 1-1/2" foam panels placed between the existing roof panel ribs to form a level surface. Metal furring channels are then installed parallel to the ridge at 24" o.c. and attached to the existing roof panel ribs. A Kynar 500 painted metal roof panel is attached via concealed fasteners and metal clips that accommodate thermal expansion. Adjacent panels meet at butting vertical ribs that are folded together at the top, approximately 1-1/2" above the surface of the panel. Gutters would be reworked to accommodate the new system.

- Cost: $4.50 per square foot (31,250 SF x $4.50 = $140,625.00 +/-)
- Up to 25 year warranty
- Many colors choices available
- Approx. two weeks (+) for installation

3. PVC Membrane: This system is similar to the Rubber Membrane in substrate installation. PVC sheet is used rather than the EPDM. Edges of the sheets are anchored down with termination strips screwed to the building.

- Cost: $4.75 per square foot (31,250 SF x $4.75 = $148,437.00 +/-)
- 15 year warranty (up to 20 year at extra cost)
- White color – does not accelerate snow melting
- Shows the dirt

4. Urethane Foam: This system is sprayed-on expansion foam (base coat) that is coated with an Acrylic sprayed-on layer (top coat) with a granular top coat. Foam is a closed-cell product with 3 pound density which obtains a 42 psi rating when cured.

- Cost: $3.55 per square foot (31,250 SF x $3.55 = $110,937.00 +/-)
- 10 year warranty
- White color – does not accelerate snow melting
- Approx. one to two weeks for installation

Option 2 Bay / GE Silicone over the foam (versus the acrylic)
- Cost: $3.98 per square foot (31,250 SF x $3.98 = $124,375.00 +/-)
- 15 year warranty

Ceiling Systems

1. Spray on Cellulose: A mixture of cellulose fibers and glue is sprayed directly to the ceiling metal panel. Components not meant to be sprayed (lights, conduit, piping /fittings, etc) must be protected during installation. Also, the sprinkler heads must be lowered to clear the thickness of the material. New light fixtures would be suspended below ceiling.

- Cost: $1.90 per square foot (1.25" thk.) + $0.25 per/ square foot rework sprinklers = $2.15 per square foot total cost (does not include protecting other building components)
- Published NRC rating of .80 (industry typically rates at .50 - .70)
- Very rough textured look (deep shag carpeting made rigid with glue)
- R- value of 4.5
- Very difficult to clean – painting reduces NRC rating

(Estimated Cost range $59,375.00 to $67,187.00)

2. Suspended Acoustic Tile: 2' x 4' mineral fiber acoustic panels dropped into a metal grid. Grid can be installed at a pitch to follow the roof line, or be installed with steps, clouds, etc for visual effect. New light fixtures would be suspended flush in the grid.

- Cost: $2.50 - $3.00 per square foot + $0.90 per square foot rework sprinklers = $3.40 - $3.90 per square foot.
- NRC of .70
- Various textures available – most cleanable
- Negligible R-value.

(Estimated Cost range $106,250.00 to $121,875.00)

Current Recommendations
We will put together a bid specification for any and all options noted above, but our current recommendations at this time are:

Roofing System

Standing Seam Metal Roofing
* Best Value for the Product
*Similar to what has been before
*25 Year Warranty

Ceiling System

Acoustical Lay-in Ceiling and Grid
* Flexibility with lights, speakers, etc
*Similar to what has been before
*Commercial look and feel (Meetings or Performances)